CLAIMS:

1. An optical signal processor comprising:

a first input terminal for a pulse signal light with a signal wavelength;

a second input terminal for a probe light with a probe wavelength different from the signal wavelength;

a first splitter to split the probe light into two portions;

an XPM optical device, to which one portion of the split output lights from the first splitter and the pulse signal light enter, to modulate the one portion of the split output lights from the splitter according to amplitude variation of the pulse signal light;

a second splitter to split the light with the probe wavelength phase-modulated by the XPM optical device into two portions;

a first combiner to combine the other portion of the spilt output lights from the first splitter with the one portion of the split output lights from the second splitter in in-phase relation during a period corresponding to a non-pulse period of the pulse signal light; and

a second combiner to combine the other portion of the split output lights from the second splitter with the output light from the first combiner in in-phase relation during a period corresponding to a pulse period of the pulse signal light.

2. The optical signal processor of claim 1 wherein the probe light comprises a continuous wave light.

3. An optical signal processing method comprising steps of:

inputting a pulse signal light with a signal wavelength;

inputting a probe light with a probe wavelength different

from the signal wavelength;

splitting the probe light into two portions to generate first and second probe light components;

modulating optical phase of the first probe light component using an XPM device according to amplitude variation of the pulse signal light;

splitting the phase-modulated first probe light component into two portions to generate first and second PM modulated lights;

combining the first PM modulated light with the second probe light component at practically equivalent amplitude in in-phase relation during a period corresponding to a non-pulse period of the pulse signal light; and

combining the second PM modulated light with the combined lights of the first PM modulated light and the second probe light component in in-phase relation during a period corresponding to a pulse period of the pulse signal light.

4. The method of claim 3 wherein the probe light comprises a continuous wave light.